UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,448	05/09/2007	Marco Potke	2004P57011 US	5356

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EXAMINER
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ART UNIT	PAPER NUMBER
2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
	10/598,448	POTKE, MARCO
Office Action Summary	Examiner	Art Unit	
	Mia M. Thomas	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.
      4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-17* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *30 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.
      Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
      Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
      a)☒ All   b)☐ Some * c)☐ None of:
         1.☒ Certified copies of the priority documents have been received.
         2.☐ Certified copies of the priority documents have been received in Application No. _____.
         3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
      * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
      Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413)
      Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

Priority

1.   Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which

papers have been placed of record in the file.

Claim Objections

2.   Claims 6-17 are objected to under 37 CFR 1.75(c) as being in improper form.

See MPEP § 608.01(n).   Accordingly, Claims 6-17 **will not** be further treated on the

merits. **Appropriate correction is required**.

Claim Rejections - 35 USC § 101

3.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine,
> manufacture, or composition of matter, or any new and useful improvement
> thereof, may obtain a patent therefor, subject to the conditions and
> requirements of this title.

a.   Claim 16 is rejected under 35 U.S.C. 101 because the claimed invention

is directed to *non-statutory subject matter* as follows.   Claim 16 defines *a*

computer program product embodying functional descriptive material. However,

the claim does not define a *non-transitory computer-readable storage medium* or

non-transitory computer-readable *storage* memory and is thus non-statutory for

that reason (i.e., "When functional descriptive material is recorded on some *non-*

transitory computer-readable *storage* medium it becomes structurally and

functionally interrelated to the medium and will be statutory in most cases

since use of technology permits the function of the descriptive material to be

realized" – Guidelines Annex IV).   The scope of the presently claimed invention

encompasses products that are not necessarily computer readable, and thus

NOT able to impart any functionality of the recited program.   The examiner

suggests amending the claim(s) to embody the program on *non-transitory*

computer-readable *storage* medium" assuming the specification does NOT

define the computer readable medium as a "signal", "carrier wave", or "transmission medium" which are deemed non-statutory (refer to "note" below). However, the aforementioned assumption has been disproved as explained below in the second 35 U.S.C. 101 rejection below. Any amendment to the claim should be commensurate with its corresponding disclosure.

Note:

A "signal" (or equivalent) embodying functional descriptive material is neither a process nor a product (i.e., a tangible "thing") and therefore does not fall within one of the four statutory classes of § 101. Rather, "signal" is a form of energy, in the absence of any physical structure or tangible material.

Should the full scope of the claim as properly read in light of the disclosure encompass non-statutory subject matter such as a "signal", the claim as a whole would be non-statutory. In the case where the specification defines the non-transitory computer readable storage medium or storage memory as statutory tangible products such as a hard drive, ROM, RAM, etc, as well as a non-statutory entity such as a "signal", "carrier wave", or "transmission medium", the examiner suggests amending the claim to _include_ the disclosed tangible computer readable media, while at the same time _excluding_ the intangible media such as signals, carrier waves, etc.

4.   35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, per se, and as such are nonstatutory natural phenomena. O'Reilly, 56 U.S. (15 How.) at 112-14. Moreover, it does not appear that a claim reciting a signal encoded with functional descriptive material falls within any of the categories of patentable subject matter set forth in Sec. 101.

... a signal does not fall within one of the four statutory classes of Sec. 101.

... signal claims are ineligible for patent protection because they do not fall within any of the four
statutory classes of Sec. 101.

b) Claim 16 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 16, with corresponding specification details at page 5, lines 25-32, recites a "data carrier" with functional descriptive material. While "functional descriptive material" may be claimed as a statutory product (i.e., a "manufacture") when embodied on a non-transitory, tangible computer readable storage medium, a data carrier or signal embodying that same functional descriptive material is neither a process (i.e., a series of steps per se.) nor a product (i.e., a tangible "thing") and therefore does not fall within one of the four statutory classes of § 101. Rather, "signal" is a form of energy, in the absence of any physical structure or tangible material. Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim Rejections - 35 USC § 112

5.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6.   Claim 17 is rejected under 35 U.S.C. 112, first paragraph, because while the specification partially recites enabling subject matter for a structural element performing the claimed functions, the specification **does not** reasonably provide enablement for a single structural element performing all of the claimed functions. The specification **does not** enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims ("A single means claim, i.e., where a means recitation does not

appear in combination with another recited element of means, is subject to an undue breadth rejection under 35 U.S.C. 112, first paragraph" because a single means claim covers "every conceivable means for achieving the stated purpose" and "the specification disclosed at most only those means known to the inventor" - *MPEP, at paragraph 2164.08(a)).*

7.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8.   Claims 14 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As best understood by the Examiner, Claims 14 and 15 provides for the use of a method for performing a similarity search on the basis of determined feature data, and on the basis of classification of determined feature data, respectively, but, since the claim **does not** set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

9.   Claims 14 and 15 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki,* 153 USPQ 678

(Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner,* 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

10.   **Regarding Claim** 4: The claim fails to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "approximately" in claim 4 is a relative term which renders the claim indefinite. The term "approximately" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. **Appropriate correction is required for proper claim analysis.**

11.   Claims 1 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner is unclear as to how "redundant partitioning" is defined with respect to the limitation "partitioning scheme" as recited at line 4 of claim 1 and line 4 of claim 5. **Appropriate correction is required for proper claim analysis.**

Claim Rejections - 35 USC § 103

12.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13.   Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kriegel et al. "Using Sets of Feature Vectors for Similarity Search on Voxelized CAD

Objects" SIGMOD 2003, June 9-12 (ACM), pages 587-598 (1-12) in combination with

Domanik et al. (US 6091842 A).

Regarding Claim 1: (As best understood by the Examiner) Kriegel teaches a method

for determining feature data ("Based on the most promising of these three models, we

explain how sets of feature vectors can be used for more effective and still efficient

similarity search." at abstract) that represents information about the shape of an

object (o), the object (o) being located in a k-dimensional space ("Examples for new

applications that require the retrieval of similar 3-D objects include databases for

molecular biology, medical imaging and computer aided design." at page 1(587),

Section 1. Introduction, left column) the method comprising the steps of:

determining a partitioning scheme (RE, RP) that defines a plurality of cells (p) in the

space in which the object (o) is located such that at least some of the cells (p) each

contain a respective portion of the object (o) (Refer to Figure 1, further at Sections 1.1

Shape Histograms and Section 3.3 Spatial Features; "We divide the data space into

axis parallel, equi-sized partitions (cf. Figure 1). This kind of space partitioning is

especially suitable for voxelized data, as cells and voxels are of the same shape, i.e.

cells can be regarded as coarse voxels.")

and determining the feature data for the object (o) ("After partitioning the data space,

we have to determine the spatial features of the objects for each grid cell depending on

the chosen model." at page 588, Section 3.3 Spatial Features) on the basis of at least

one property of the respective portions of the object (o) that are contained in the

plurality of cells (p) (Refer to Figure 4, Section 4, Using Sets of Feature Vectors for Similarity Queries)

Domanik teaches at least two of the plurality of cells (p) overlap each other at least in part ("Preferably, tiles are positioned so that the viewable material is positioned at the center of the tile. As seen in FIG. 1, tiles may be separate to cover viewable material which can be covered by a single tile. Tiles may also overlap one another (as seen in FIG. 1) to cover viewable material which requires multiple tiles to cover the material." at column 10, lines 8-28)

Kriegel and Domanik are combinable because they are in the same field of image processing and analysis and classification of feature data.

It would have been obvious for at least two of the plurality of cells to overlap each other, at least in part as taught by Domanik. Further, it would have also been obvious to describe the cells of the feature data as overlapping cells, at least in part and to utilize those overlapping cells of Domanik with the method as taught by Kriegel.

The suggestion/motivation for combining Kriegel and Domanik would have been at least "improve[ed] cytological screening efficiency by varying amounts, and also reduce[ing] the time required to accurately analyze a cytological specimen and thereby increase the efficiency by which such a specimen may be analyzed." (Domanik, column 1, lines 46+).

All of the claimed elements were known in the prior art at the time that the invention was made. It would have been obvious to the skilled artisan to be able to combine the teachings of Kriegel and Domanik by known methods with no change in their respective functions, and the combination of the teachings would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

Therefore, it would have been obvious to combine the teachings of Kriegel and Domanik to obtain the specified claimed elements of Claim 1.

Regarding Claim 2: (As best understood by the Examiner) Domanik teaches the plurality of cells (p) comprises at least a first and a second group of cells (gi.sub.1, gi.sub.2; go.sub.1, go.sub.2) such that the union of the cells in the first group of cells (gi.sub.1; go.sub.1) coincides with the union of the cells in the second group of cells (gi.sub.2; go.sub.2), wherein each cell of the first group of cells (gi.sub.1; go.sub.1) overlaps at least in part with at least one respective cell of the second group of cells (gi.sub.2; go.sub.2) (Refer to Figure 1, numeral 102; "Image capture of a specimen 103 on the slide 102 is performed by subdividing the slide 102 into a plurality of equally sized regions, designated by the dotted lines in the slide 102, and individually capturing a digital image of a region.")

Note: As shown at Figure 1, the Examiner is points to numeral 106 to teach that the cells have been divided into groups of cells as shown at numeral 102. It is also shown at least at numeral 102 that the groups of cells overlap.

14.   Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kriegel et al. "Using Sets of Feature Vectors for Similarity Search on Voxelized CAD Objects" SIGMOD 2003, June 9-12 (ACM), pages 587-598 (1-12) in combination with Domanik et al. (US 6091842 A) and further in view of Hancock (US 20030036842 A1).

Regarding Claim 3: (As best understood by the Examiner) Kriegel and Domanik in combination teaches all the claimed elements as rejected above. Kriegel and Domanik in combination do not expressly recite *nested cells*.

Hancock expressly teaches the plurality of cells (p) comprises at least a group of nested cells (gn), wherein all cells of the group of nested cells (gn) are nested within each other ("At least some of the plurality of cells of the one or more local city grids directly overlap and coincide with at least some of the plurality of cells of the one or more regional grids to form a nested grid structure." at abstract, paragraphs [0007, 0008]).

Kriegel, Domanik and Hancock are combinable because they are in the same field of image processing and analysis and classification of feature data. Hancock does not expressly teach objects pertaining to molecular biology or medical imaging. However, Hancock teaches computer aided design of nested grid structures of cells. The teachings of Hancock are used to expressly identify that computer aided design also achieves the same predictable results of "subdividing a cell corresponding to the data into as many levels of hierarchically arranged sub-cells as necessary to obtain a desired precision" (at paragraph [0009], Hancock).

Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Kriegel, Domanik and Hancock to obtain the specified claimed elements of Claim 3.

15.   Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kriegel et al. "Using Sets of Feature Vectors for Similarity Search on Voxelized CAD Objects" SIGMOD 2003, June 9-12 (ACM), pages 587-598 (1-12) in combination with Domanik et al. (US 6091842 A) and further in view of Luo et al. (US 20050175235 A1).

Regarding Claim 5: (As best understood by the Examiner) Kriegel teaches a method for determining feature data ("Based on the most promising of these three models, we explain how sets of feature vectors can be used for more effective and still efficient similarity search." at abstract) that represents information about the shape of an object (o), the object (o) being located in a k-dimensional space ("Examples for new applications that require the retrieval of similar 3-D objects include databases for molecular biology, medical imaging and *computer aided design.*" at page 1(587), Section 1. Introduction, left column) the method comprising the steps of:

determining a partitioning scheme (DP, RP) that defines a plurality of cells (p) in the space in which the object (o) is located such that at least some of the cells (p) each contain a respective portion of the object (o) (Refer to Figure 1, further at Sections 1.1 Shape Histograms and Section 3.3 Spatial Features; "We divide the data space into axis parallel, equi-sized partitions (cf. Figure 1). This kind of space partitioning is

especially suitable for voxelized data, as cells and voxels are of the same shape, i.e.

cells can be regarded as coarse voxels.")

and determining the feature data for the object (o) ("After partitioning the data space,

we have to determine the spatial features of the objects for each grid cell depending on

the chosen model." at page 588, Section 3.3 Spatial Features) on the basis of at least

one property of the respective portions of the object (o) that are contained in the

plurality of cells (p) (Refer to Figure 4, Section 4, Using Sets of Feature Vectors for

Similarity Queries)

Luo teaches the method being characterized in that the partitioning scheme (DP, RP)

("In an exemplary embodiment, the initial grid pattern is applied to divide the

composite image into sub-images of the same general size and shape." refer to

paragraph [0031]) is determined such that at least some of the boundaries of the cells

(p) defined by the partitioning scheme (DP, RP) are adapted to the individual shape of

the object (o) ("For example, it the original image is a two-dimensional square, the

initial grid pattern can be divided into $2.\sup.2N$ squares of equal size by (4N-2)

intersecting lines, where N is a positive integer. Similarly, a two-dimensional circular

region can be divided into a plurality of equal size wedge-shapes regions via one or

more evenly spaced lines drawn through a center point of the circular region." at

paragraph [0031]) to delimit a plurality of regions (r) in the space in which the object

(o) is located such that the respective portions of the object (o) that are contained in

the plurality of regions (r) are approximately equal to each other with respect to a

predetermined measurement metric ("In an exemplary embodiment, the selected sub-

images are divided as to produce sub-images of the same general shape. For example, if the initial grid pattern separates the image into square sub-images, the grid pattern can be modified such that a selected sub-image is separated into a plurality of smaller squares." at paragraph [0033])

Kriegel and Luo are combinable because they are in the same field of image processing and analysis, feature extraction and classification of feature data.

It would have been obvious to delimit a plurality of regions in the space in which the object (o) is located such that the respective portions of the object are approximately equal to each other as taught by Luo. Further, it would have also been obvious to determine that at least some of the boundaries of the cells defined by the partitioning scheme are adapted to the individual shape of the object as taught by Luo with the method of determining feature data as taught by Kriegel.

The suggestion/motivation for combining Kriegel and Luo would have been to at least "analyze the feature vectors with respect to an N-dimensional feature space to determine regions of feature space associated with each class." (Luo at paragraph [0056]).

All of the claimed elements were known in the prior art at the time that the invention was made. It would have been obvious to the skilled artisan to be able to combine the teachings of Kriegel and Luo by known methods with no change in their respective

functions, and the combination of the teachings would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

Therefore, it would have been obvious to combine the teachings of Kriegel and Luo to obtain the specified claimed elements of Claim 5.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mia M. Thomas whose telephone number is (571)270-1583. The examiner can normally be reached on Monday-Thursday 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh M. Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bhavesh M Mehta/   */Mia M Thomas/*
Supervisory Patent Examiner, Art Unit 2624   *Examiner, Art Unit 2624*